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tion is obtained. This gives a medium with an index $n=1.483$ to 1.486 . The index can be raised or lowered slightly by varying the proportions used in making the solvent. Thus, the indices of the ingredients are about: Eucalyptol 1.456 ; Paraldehyde 1.39 , this varies with the preparation used; Camsal 1.534 ; Sandarac 1.525 . The essence d'euparal is, of course, the solvent mixture used above. The green tint mentioned by Gilson as due to a certain copper salt is probably copper abietinate which can be had of Merck or can be made of sufficient purity by any student in the organic chemistry laboratory.

In my experience there is less difficulty in preparing this medium than with some of the staining mixtures. It takes time but also little attention. Slides mounted several months ago are in excellent condition and as near as one can judge the medium acts like Euparal. Sections can be mounted from 80% alcohol, either with or without passing thru the essence.

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CHROMOSOMES OF RANATRA SP?

During the summer of 1914 while working on the male germ cells of another type, I prepared and sectioned some testes from a species of *Ranatra* collected about Madison, Wis. The large number of chromosomes together with what seemed to be a very puzzling polymorphism of spermatocytes induced me to defer a further investigation till a later time. Recently the work upon this form has been resumed and has progressed to a point where a preliminary and tentative statement may be made.

The testes in the later nymph stages are especially valuable for sectioning as they present in many cases the whole history of the germ cells from the last spermatogonial divisions to mature spermatozoa. Sex organs from adults collected in the spring, and up to mid-summer are also generally favorable, but specimens taken in late summer and fall show very few division stages.

My first material was composed of several testes from animals collected in mid-summer and at that time believed to belong to but one species. All of these were prepared together for study. Observations

upon this mixed material show that there are at least two types of testes as regards the chromosomes.

The first type has spermatogonia with 40 chromosomes of various sizes; primary spermatocytes with 21, all of which divide equally; secondary spermatocytes with 21, two of which do not divide but pass directly into different spermatids each of which then possess 20 chromosomes. The two chromosomes which do not divide in the second division act as a typical XY pair and always appear near the center of the chromosome group in this division but their behavior is not sufficiently different to enable them to be identified before this stage.

The second type has spermatogonia provided apparently with 8 or 10 more chromosomes than the first type. The primary and secondary spermatocytes seem to have as a distinguishing mark a group of very small chromosomes near the center of the larger group. Neither the number nor the behavior of the chromosomes in the spermatids has been determined although some interesting conditions are suggested by the rather meager observations made to date.

Another interesting though not necessarily important fact is that among the individuals collected in July few possessed testes of the second type while a large percentage of those collected in September did possess cells of that type.

In addition to the interest attached to spermatogenesis these forms seem to offer an opportunity to determine possible correlation between the chromosome differences and somatic variations as soon as the individual origin of the two kinds of germ cells can be determined.

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NOTES ON COLLECTING AND MOUNTING ROTIFERS

C. F. Rousselet, the veteran English naturalist (J. Q. M. C., Nov. 1917) sums up methods which he has worked out for collecting, handling, preserving and mounting rotifers.

For a collecting stick he recommends a walking stick with a telescopic joint, with a ring net $6 \times 5\frac{1}{2}$ inches and 6 inches long, made of bolting silk No. 15 or 16. Silk lasts longer than mull and does not clog or shrink as it does.